



Federal Democratic Republic of Ethiopia

👉 EDICT OF GOVERNMENT 👈

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ET 791 (2002) (English): Black tea -
Quality classification



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ETHIOPIAN STANDARD

ES 791:2002

(Reaffirmed:2012)

First edition

Black tea - Quality classification

ICS: 67.140.10

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Foreword

This Ethiopian Standard has been prepared under the direction of the Technical Committee for Coffee and Tea (TC 29) and published by the Ethiopian Standards Agency (ESA).

The standard is a reaffirmation for reprint of the Ethiopian Standard ES 791:2002, Black tea - Quality classification, with some editorial changes without altering the technical contents in the former text.

Black tea — Quality classification

1 Scope

This Ethiopian standard specifies procedures for classifying the quality of black tea import export in particular.

2 Normative references

The following Ethiopian standards contain provisions, which, through reference in this text, constitute provisions of this Ethiopian standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this Ethiopian standard are encouraged to investigate the possibilities of applying the most recent editions of the Ethiopian Standards indicated below. Registers of currently valid standards are maintained in the Ethiopian Standards Agency (ESA).

ES ISO 1573, *Black tea – Determination of loss in mass at 103 °C*.

ES ISO 1839, *Tea – Sampling*.

ES ISO 3103, *Tea - Preparation of liquor for use in sensory analysis*.

ES ISO 6078, *Black tea -Vocabulary*.

3 Definition

For the purpose of this Ethiopian standard the terms and definitions given in ES ISO 6078 shall apply in addition to the following:-

3.1 classification

assessing black tea quality and granting an official quality standard which includes physical quality examination of the black tea infusion and organoleptic evaluation of the liquor

3.2 tea testing

the organoleptic evaluation of black tea infusion to determine its briskness, strength flavour colour and body

3.3 theaflavins (TF)

product of enzyme initiated oxidative decarboxylation and condensation between a simple catechine and a gallo catechine in the presence of oxygen. Briskness, strength and brightness of black tea are due to these compounds

3.4 thearobigins (TR)

condensation and polymerization products formed during fermentation of tea. Their structures are unknown, the thickness, body and colour of black tea are due to this group of compound

3.5 infusion

denotes infused leaf, the colour and evenness of which gives an indication of the nature of the liquor.

4 Quality classification

4.1 General

Quality classification, in black tea is the primary step in the assessment of quality of the dry tea leaf since it gives an idea of the standard of the manufacture.

Note:

- a) The black tea leaf shall be assessed in accordance with ES 788.
- b) All black tea shall be checked and certified before it is exported.

4.2 Procedures

4.2.1 Sampling

Sampling shall be done in accordance with ES ISO 1839.

4.2.2 Moisture determination:

Moisture can be determined in accordance with ES ISO 1573, during this the moisture content for the black tea at any cost shall not exceed 5% by mass.

4.2.3 Physical evaluation

Physical quality evaluation of Black tea includes the dry leaf and infused leaf (infusion) evaluation. The dry leaf is physically evaluated for defects, olfaction (odour), size, and appearance. This physical evaluation is done in accordance with ES 788. Infused leaf evaluation, on the other hand, consists of evaluation of color and evenness (Annex A).

4.2.4 Chemical evaluation

Chemical evaluation is one of the three important Black tea quality classification parameters, it helps to determine the bio-chemical constituents of black tea (Theaflavins and Thearobigins) which are responsible for the development of the major portion of black tea quality characteristics. Determination of theaflavins and thearobigins is done in accordance with Annex B. The ratio of theaflavins to thearobigins may be 1:10 or 1:12 in good black tea, but in a tea lacking briskness and strength, it may be 1:20 or more. There are also indications that a suitable ratio for a blend is 1:16 although in some commercial teas the ratio may be 1:25 or even higher.

4.2.5 Organoleptic evaluation

Is the most important aspect of black tea quality evaluation procedures, it involves determination of liquor characteristics briskness, strength, and flavour characteristics of the black tea sample by lliquoring .

The dry tea leaf is infused and its liquor is tasted by qualified tea liquorers to classify the black tea quality. Tea tasters use various terms for describing the characteristics of the liquor quality, however according to the national code of practice briskness, strength and flavour of the liquor is considered (see Annex A). The overall quality of black tea is determined by the summation of the physical, chemical, and organoleptic evaluations (see Annexes A & B).

Infused tea liquor used for organoleptic evaluation is done in accordance with ES ISO 3103.

5 Destination requirements

In addition to import export requirements described in Annex A of this text. The quality of black tea shall also fulfill the requirements of a specific destination.

6 Packaging

Black tea shall be packed according to the requirements of customary trade practices and the packaging shall be suitable for the tea so that it retains its freshness.

7 Marking

Black tea in bags shall be marked with an appropriate designation and quality mark upon approval by the responsible authority.

8 Designation

In marking orders for commercial and technical document, Black tea shall have an appropriate designation which may include origin, type class.

Annex A
(Normative)
Black tea Quality Classification

Date _____
Code _____
Origin _____

PHYSICAL EVALUATION /40%/												CHEMICAL EVALUATION /10%/		ORGANO LEPTIC EVALUATION /50%/						OVER ALL QUALITY
DRY LEAF /25%/								Infused leaf /15 %/				TF/TR	10%	15% Briskiness		15% Strength		20% Flavour		100 %
Defect category		Odour		Appearance		Size grade		Colour		Evenness		> 1:10	10	Brisky /Pointed/	15	High	15	Attractive	20	Class1 ≥ 81
A	10	Clean	5	Blackish	5	Peak 2mm	5	Copper	8	Even	7	≤ 1 :10 >1 :12	8	Slightly	12	Full	12	V. good	17	Class 2 61-80
B	8	Slightly	4	Brown	4	> 1.4mm< 2mm	4	Bright	6	Fairly even	4	≤ 1:12>1:16	6	Brisky	9	Slightly	9	Good	14	Class 3 41-60
C	5	Moderate	3	Curly	3	> 1mm< 1.4mm	3	Dull	4	Moderate	1	≤ 1:16>1:20	4	Light	6	Hard	6	Fair to good	11	Class 4 21-40
D	3	Stale	2	Flacky	2	> 710 μmm < 1mm	2	Green	2	Uneven	0	≤ 1:20>1:25	2	Flat	3	/Harsh/	3	Fair	8	≤ 22
E	1	Tainted	1	Mixed	1	>150 μmm < 355 μmm	1	Uneven	0			≤ 1:25	0	/Soft/	0			Average	5	
																		Poor	2	

Moisture % _____ Physical Evaluation% _____ Organoleptic evaluation % _____ Overall quality% _____ Class _____

Aroma:- Excellent
v. good
good
poor
tarry

Body: Good
Thin

Remark:- Cream
Full
Pungent
Bakey
Dull
Earthy

old
light
baggy

Note: The remark can be expressed as :
1. Sligty (Very few)
2. Moderately (Few)
3. Some

General Comment:- _____

Note:- 1) > means greater than
< means less than
≥ means greater or equal to
≥ N.B Class 3 and above shall have flavour values not less than 14 (see Annex B).

Name of liquorers _____
Approved by Name _____

Signature _____ Date _____
Signature _____ Date _____

Annex B

(Normative)

B1 Determination of Theaflavins and Thearobigins in tea liquor

B1.1 Principle

Theaflavin and Thearobigin are estimated spectrophotometrically in an aqueous tea extract at 2 wavelengths (380 nm and 460 nm)

B1.2 Reagents

B1.2.1 Disodium hydrogen phosphate 1% (w/v)

B1.2.2 Ethyl acetate

B1.2.3 Methanol (AR)

B1.2.4 Oxalic acid 10% (w/v)

B1.3 Apparatus

B1.3.1 Vacuum flask (thermo flask)

B1.3.2 Spectrophotometer

B1.3.3 Separating funnel

B1.3.4 Round bottom flask

B1.3.5 Condenser

B1.3.6 Balance capable of weighing to the nearest 0.1g

B1.4 Procedure

B1.4.1 Preparation of standard tea infusion

Weigh 9g of black tea and reflux with 375 ml freshly boiled distilled water for 10 minutes on a water bath. Alternatively the infusions is made in vaccum flask (thrho-flask) taking 6 g tea with 250 ml boiling distilled water and filtering after 10 minutes.

B1.4.2 Extraction of TF

Mix 6 ml of infusion with 6 ml of 1% (w/v) aqueous solution of anhydrous disodium hydrogen phosphate and extract mixture with 10 ml ethyl acetate by quick repeated inversion for 1 minute on separation of the two phases drain the bottom layer and dilute the ethyl acetate extract containing the TF fraction with 5 ml ethyl acetate. Then

- i) Dilute 10 ml of TF extract with methanol to 25 ml (E_1).
- ii) Add 9 ml of water to 1 ml of tea infusion and make upto 25 ml with methanol (E_2).
- iii) Add 8 ml water to 1 ml tea infusion, 1 ml aqueous oxalic acid 10% (w/v), and make up to 25 ml with methanol (E_3).

B1.5 Determination of TF and TR

B1.5.1 Measure optical densities of E_1 , E_2 and E_3 in 1 cm cells at 380 and 460 nm with spectrophotometer

B1.6 Expression of the result

B1.6.1 Calculation

At 380 nm $\% \text{ TF} = 2.25 \times E_2$

$$\% \text{ TR} = 7.06 (4E_3 - E_1)$$

At 460 nm Total colour = $6.25 \times 4E_2$

$$\% \text{ Brightness} = E_1/4E_2 \times 100$$

B1.7 Test report

Test report shall include at least the following information:

- i) Origin and type
- ii) Test method used
- iii) The result of the test as indicated in clause B1.6
- iv) The date of the test



Organization and Objectives

The Ethiopian Standards Agency (ESA) is the national standards body of Ethiopia established in 2010 based on regulation No. 193/2010. ESA is established due to the restructuring of Quality and Standards Authority of Ethiopia (QSAE) which was established in 1970.

ESA's objectives are:-

- ❖ Develop Ethiopian standards and establish a system that enable to check weather goods and services are in compliance with the required standards,
- ❖ Facilitate the country's technology transfer through the use of standards,
- ❖ Develop national standards for local products and services so as to make them competitive in the international market.

Ethiopian Standards

The Ethiopian Standards are developed by national technical committees which are composed of different stakeholders consisting of educational Institutions, research institutes, government organizations, certification, inspection, and testing organizations, regulatory bodies, consumer association etc. The requirements and/or recommendations contained in Ethiopian Standards are consensus based that reflects the interest of the TC representatives and also of comments received from the public and other sources. Ethiopian Standards are approved by the National Standardization Council and are kept under continuous review after publication and updated regularly to take account of latest scientific and technological changes.

Orders for all Ethiopian Standards, International Standard and ASTM standards, including electronic versions, should be addressed to the Documentation and Publication Team at the Head office and Branch (Liaisons) offices. A catalogue of Ethiopian Standards is also available freely and can be accessed in from our website.

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International Involvement

ESA, representing Ethiopia, is a member of the International Organization for Standardization (ISO), and Codex Alimentarius Commission (CODEX). It also maintains close working relations with the international Electro-technical Commission (IEC) and American Society for Testing and Materials (ASTM). It is a founding member of the African Regional Organization for standardization (ARSO).

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